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How AI Overview of Customer Reviews Influences Consumer Perceptions in E-Commerce?

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Abstract

The proactive adoption of Generative Artificial Intelligence (GenAI) by e-commerce platforms to enhance consumer experience is emerging as a predominant trend. This research investigates the influence of AI overview on consumers' perceived usefulness of the customer reviews section on e-commerce platforms, thereby further expanding the scope of application of the technology acceptance model (TAM). Across three scenario-based experiments (n = 568), we examined the effects of AI overview and their underlying mechanisms. Results consistently confirmed a main effect: the presence of AI overview significantly enhanced perceived usefulness compared to its absence. Study 2 identified perceived diagnosticity as a mediator, while Study 3 revealed that need for cognition (NFC) moderated both the main effect and the mediation process. Specifically, for High-NFC participants, the presence or absence of AI overview made no significant difference, whereas for Low-NFC participants, AI overviews significantly increased perceived usefulness. These findings offer novel insights into the effectiveness of AI overview in shaping the consumer evaluations of online customer reviews. By clarifying the mediating role of perceived diagnosticity and the boundary condition of NFC, this study contributes to a more nuanced understanding of how AI can be strategically integrated into e-commerce platforms to enhance consumer decision-making and guide business development.

Keywords: e-commerce platform; AI overview; online customer reviews; perceived usefulness; perceived diagnosticity; need for cognition

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1. Introduction

AI-powered technologies are rapidly being integrated into market operations, improving consumer experiences in e-commerce and driving business growth [1]. Leveraging the advanced capabilities of deep learning and natural language processing, AI can effectively handle textual and visual information to provide product or service information and purchasing suggestions, thereby reducing consumers' information search burden and cognitive effort [2], leading online platforms to adopt AI technologies for content generation [3,4]. For example, Google has deployed the "AI Overview" feature in its search engine, providing users with clear and concise search results. Similarly, REDNOTE integrated "Search potato" into its tourism information section, which intelligently summarizes user-generated travel posts and presents concise insights into destination characteristics and travel tips. In addition, e-commerce platforms are leveraging AI to manage customer reviews, a key component of platform electronic word-of-mouth (eWOM) [5], For instance, Amazon introduced "Customer says", an AI-powered tool that summarizes customer reviews by

extracting and highlighting key points from real customer experiences; the summaries are presented at the top of the customer reviews section to aid consumers' purchase decisions. Qunar also implemented "AI review assistant" for hotel bookings, aggregating users' feedback into succinct overall evaluations. Unlike traditional individual customer reviews, which are often more abundant and diverse [6], the AI overview presents information in a more concise and intuitive format. Despite its innovative nature, a notable gap remains in academic research on AI overview from the perspective of consumer behavior, Further investigation into consumers' perceptions of AI overview holds considerable value, especially for examining whether the presence of AI overview consistently enhances consumers' experiences across different e-commerce scenarios.

Prior research suggests that consumers in certain contexts prefer AI intervention, perceiving it as more professional, objective, and logical, which enhances the credibility of AI-generated content [2,7]. However, in other contexts, AI involvement triggers negative attitudes, as consumers perceive the algorithm to be overly mechanical, lacking in empathy, and failing to deliver personalized experiences [8–10]. Scholars have explored how anthropomorphic cues and stylistic adjustments in AI services influence consumer perceptions and recommendation effectiveness [11]. These findings indicate that consumer attitudes toward AI are shaped not only by the form of AI expression but also by the decision-making context.

Unlike offline shopping, where information is conveyed through multiple channels, e-commerce platforms primarily rely on visual displays to communicate with consumers [12]. The rise of the internet has enabled consumers to share opinions on product and service experiences through online reviews, for example, in hotel bookings [13]. Most consumers consult online customer reviews when making purchase decisions, particularly given the intangible risks associated with online shopping [14]. Compared with seller-provided information, customer reviews reflect genuine experiences, reducing information asymmetry and enhancing decision-making by offering greater authenticity and trustworthiness [15]. Yet, the sheer volume of customer reviews makes it challenging for consumers to process and extract genuinely useful insights [6]. The technology acceptance model (TAM) identifies two factors influencing individuals' acceptance and adoption of new technologies: perceived usefulness and perceived ease of use. Perceived usefulness, a key component of TAM, refers to the degree to which an individual perceives that using a particular technology improves their performance [16]. Enhancing consumers' perceived usefulness of the customer reviews section on e-commerce platform can improve decision-making efficiency and quality, fostering positive attitudes toward products, services, and e-commerce platforms themselves.

Given the importance of AI overview and consumer perceptions, this research examines consumers' attitudes toward AI overview of customer reviews on e-commerce platforms. Our findings reveal how the AI overview influences consumers' perceived usefulness of the customer review section and extend existing research on eWOM and AI applications. It also investigates how consumers' need for cognition (NFC) moderates this relationship, offering meaningful insights for managing AI applications in the customer reviews section. These findings provide practical insights for e-commerce platforms seeking to introduce AI-powered technologies to enhance consumer perceptions and experiences.

2. Literature Review and Hypothesis Development

2.1. Consumers' Attitude Toward AI

AI-powered systems can accurately interpret external data, learn from it, and flexibly adapt by integrating the acquired information [17], thereby enabling the high-quality execution of tasks and services [18]. In some scenarios, consumers exhibit a preference

for AI intervention, leading to algorithm appreciation. For instance, the use of AI may positively influence consumers' perceptions of novelty and usefulness, evoking positive emotions [19,20]. When tasks emphasize "objectivity" and "rationality", consumers show stronger trust in AI algorithms and actively use them to aid decision-making [7]. Research from the perspective of linguistic style has found that consumers exhibit higher acceptance of AI-generated information that employs metaphorical language [11,21]. Some highly anthropomorphic AI can elicit positive perceptions, such as intelligent assistants demonstrating high empathy [22]. Preferences for AI recommendations also emerge in utilitarian and cognitively oriented contexts [2,23].

However, AI intervention may lead to consumers' negative perceptions in certain cases. Unlike humans, consumers hold certain stereotypes about AI, perceiving it as lacking uniqueness and struggling to meet personalized needs [9]. Even if AI-driven service robots or Chatbots possess anthropomorphic features, a lack of empathy can lead to psychological avoidance [22], diminishing users' experiences and perceived trust. In the contexts of cause-related marketing (CRM), AI disclosure may elicit consumer skepticism, ultimately impairing purchase intention [24]. Additionally, for creative products, consumers exhibit algorithm aversion, resulting in negative impressions of AI intervention in symbolic products [25]. Through the effect of perceived wisdom, AI-made products may lead to lower creativity evaluations [26].

2.2. AI Overview and Perceived Usefulness of Customer Reviews Section

Unlike offline purchases, the intangibility of online consumption heightens consumers' risk perceptions, prompting them to seek diverse informational cues and enhance product knowledge to support decision-making [14]. Most e-commerce platforms, such as Amazon, Coupang and Taobao, have introduced the customer reviews section that provide authentic post-purchase evaluations and experiential to assist consumers' decision-making. Online customer reviews, as a key component of electronic Word-of-mouth (eWOM), help reduce consumers' information asymmetry, lower search costs, and conserve cognitive resources [5,15]. Review usefulness refers to the extent to which reviews assist other consumers in making purchase decisions [27]. Research on information technology highlights individuals' limitations in information processing capacity, speed, and breadth [28]; in an era of data explosion, extracting key insights from a vast volume of platform-provided customer reviews has become a challenge for consumers [6]. Prior research has explored how customer reviews characteristics such as readability and fluency influence perceived usefulness [29,30], with high perceived usefulness leading to positive purchase decision-making, yet these studies focus on the informational attributes of the customer reviews, rather than enhancing consumer' ability to process and integrate massive amounts of information. Further research is needed to understand how AI tools that focus on objectivity, analytical processing, and cognitively oriented tasks influence consumers' evaluation processes.

Recent studies on AI application indicate that e-platforms have begun to incorporate AI-mediated algorithmic tools to assist consumers in decision-making; for example, AI recommendation systems aim to assist consumers in collecting, analyzing, and processing information [31–33], which primarily serve persuasive functions. They guide consumers' attention toward specific products or services and focus on improving sales efficiency rather than supporting consumers' cognitive understandings, which may limit consumers' ability to obtain objective and useful insights from large volumes of customer reviews.

In the context of e-commerce shopping scenarios, with the rapid advances in deep learning and natural language processing [4], platforms have increasingly adopted a new

form of AI application: the AI overview—to enhance consumers' experience and foster eWOM. Distinct from recommendation algorithms, AI overview, positioned at the top of the customer reviews section, consolidates all genuine customer reviews into concise, factual summaries designed to enhance consumers' cognitive fluency and decision confidence (e.g., Customer Says from Amazon). Rather than promoting particular products, it serves as a non-persuasive, analytically oriented mechanism that synthesizes information objectively, allowing consumers to delve more efficiently into relevant information while mitigating cognitive overload.

As a relatively novel concept, consumers often perceive AI-generated content as distinctive and innovative, leading products and services labeled as "AI-powered" or "AI-generated" to evoke more favorable attitudes, such as sharing intentions [34]. Moreover, consumers tend to believe that AI systems perform particularly better in tasks that are objective, structured, and cognitively oriented on achieving predefined goals [7]. In a product evaluation context, AI-generated contents are typically rated more positively for low creativity or highly standardized offerings [35,36]. Similarly, the analysis, keyword extraction, and summarization of customer reviews overview involve minimal affective or subjective expression. Therefore, the concise and comprehensive information provided by the AI overview aligns well with consumers' expectations of AI-assisted evaluation and facilitates cognitive fluency regarding key information from reviews, ultimately enhancing the perceived usefulness of the customer reviews section on e-commerce platforms. Thus, we proposed the following:

H1. *The presence (vs. absence) of AI overview enhances consumers' perceived usefulness of the customer reviews section on e-commerce platforms.*

2.3. The Mediating Role of Perceived Diagnosticity

Perceived diagnosticity refers to the extent to which consumers perceived information as useful for evaluating product quality and making purchase decisions [37]. Within the TAM, it can be understood as an information-based antecedent of perceived usefulness, where consumers are more likely to perceive a system or feature as useful when the information it provides helps them make confident and accurate evaluations [16,38–40]. In other words, perceived diagnosticity functions as a cognitive bridge that translates the informational value of platform content into perceived usefulness within the TAM structure.

According to Cognitive Load Theory (CLT), individuals' cognitive resources are limited; processing a large amount of complex information can easily lead to cognitive overload, which reduces information-processing efficiency and decision quality [41,42]. Online customer reviews are typically voluminous and stylistically diverse, making it difficult for consumers to extract relevant insight efficiently [40]. This cognitive strain can lower the perceived diagnosticity and consequently diminish their perceived usefulness of reviews for decision-making. AI overview can alleviate this problem by reducing extraneous cognitive load and directing consumers' attention toward core product attributes such as performance, quality, and user experience. By simplifying information processing, the AI overview helps consumers preserve cognitive resources for deeper, central-route processing [43], thereby enhancing the perceived diagnosticity of information provided by platforms. Higher perceived diagnosticity subsequently fosters stronger perceptions of the usefulness of the customer reviews section. Therefore, perceived diagnosticity serves as a key mediating mechanism linking AI-driven cognitive simplification to consumers' perceived usefulness of the customer reviews section. Based on these findings, the following hypothesis is proposed:

H2. *Perceived diagnosticity mediates the effect of AI overview on consumers' perceived usefulness of the customer reviews section on e-commerce platforms.*

2.4. The Moderating Role of Need for Cognition

Need for cognition (NFC) is defined as "a tendency to engage in and enjoy thinking", reflecting an individual's inclination to participate in and derive pleasure from deep thinking activities [44]. NFC can be assessed across multiple dimensions, including desire for understanding, enjoyment of thinking, investment of cognitive effort and preference for complexity [45]. In studies on persuasion, participants with varying NFC levels exhibit different cognitive responses. High-NFC (HNFC) consumers tend to engage in more elaborate information processing [46], prefer complex cognitive strategies, and enjoy cognitively demanding tasks [47]. When making purchase decisions, HNFC consumers demand extensive product-related information and engage in logical reasoning, and are less influenced by simple inferences or heuristic cues [48]. In contrast, Low-NFC (LNFC) consumers do not enjoy problem-solving and tend to avoid cognitive activities [49], preferring explicit conclusion over implicit information [50]. LNFC consumers exhibit lower motivation for cognitive engagement and rely more on heuristic cues that emphasize peripheral attributes [51].

CLT provides the cognitive foundation for understanding how AI overview enhances the perceived usefulness of the customer reviews section—by reducing cognitive load and improving the perceived diagnosticity. However, the strength of this mechanism depends on consumers' NFC level. HNFC consumers driven by stronger cognitive motivations and preferences are more willing to invest greater cognitive effort in analyzing customer reviews to satisfy their cognitive needs; for these individuals, AI overview simplifies and summarizes review contents, and potentially reduces opportunities for deep cognitive engagement, thereby weakening the effect of AI overview on perceived usefulness via perceived diagnosticity. Conversely, LNFC consumers prefer to minimize cognitive effort. For them, AI overview serves as a cognitive aid that reduces information overload and enhances decision confidence, leading to stronger perceived diagnosticity and higher perceived usefulness. Figure 1 presents the relationship between the identified variables. Based on these findings, this paper proposes the following hypotheses:

H3a. *Need for cognition (NFC) moderates the effect of AI overview on consumers' perceived usefulness of the customer reviews section on e-commerce platforms. Compared to HNFC consumers, this effect is more pronounced for LNFC consumers.*

H3b. *Need for cognition (NFC) moderates the mediating effect of perceived diagnosticity. Compared to HNFC consumers, this effect is more pronounced for LNFC consumers.*

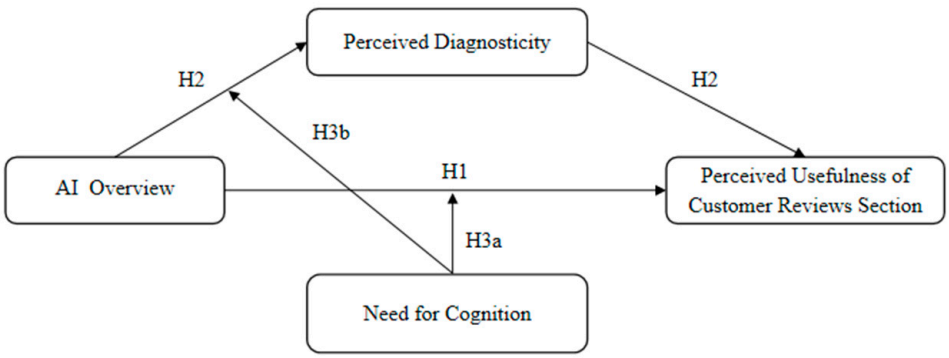

Figure 1. The conceptual framework.

3. Study 1: Main Effect

This study aims to test the main effect of AI overview (present vs. absent) on consumers' perceived usefulness of the customer reviews section. We hypothesize that when the e-commerce platform provides AI overview, consumers will perceive the customer reviews section as more useful.

3.1. Data Sources and Stimuli

A total of 120 Chinese participants were recruited through Credamo, a survey platform in China (https://www.credamo.com/ (accessed on 15 August 2025), M_{age} = 33.38, SD = 8.32; 70.0% female). The entire experimental procedure complied with ethical review requirements and did not involve any sensitive issues. Participants were compensated with a monetary reward upon completing the experiment. After consenting to begin the experiment, participants were asked to imagine they were purchasing a new air conditioner for their bedroom and had found an air conditioner model "SMART" on a fictional e-shopping platform called "ANON." To learn more about the product, participants were going to check customer reviews from the ANON platform. Participants were then provided with images of the customer reviews section from the fictional e-shopping platform ANON to serve as stimulus materials (see Appendix A). The experiment employed a single-factor between-subjects design (AI overview: present vs. absent), with participants randomly assigned to one of the two groups. A power analysis conducted using G*Power 3.1 indicated that a minimum of 118 participants were required to detect a large effect (f = 0.4) with 99% power at α = 0.05; the obtained sample size satisfied the power requirement. In the present group, an AI overview of customer reviews was displayed at the top of the customer reviews section, and the stimulus materials highlighted that the content was summarized by AI to reinforce participants' perception of the AI overview. The presentation of the AI overview followed the objective and concise language style commonly used in AI-generated content on existing platforms to activate participants' perception of AI cues. Meanwhile, the absent group was shown only normal customer reviews.

3.2. Procedure and Measures

After reading the customer reviews section, participants were asked to rate whether they perceived the platform which introduces technology to manage reviews as a manipulation check. All items were measured on a 7-point Likert scale. Attention check items were added to the experiment to enhance quality control. Next, participants rated the perceived usefulness; the 4-items scale was adapted from Davies to suit the need for measuring participants' experiential perceptions in the simulated e-commerce platform context (e.g., "I found that the reviews' content provided by the platform can improve my performance in decision-making. 1 = strongly disagree, 7 = strongly agree [16]"; Cronbach's α = 0.88). Finally, demographic data (gender, age, occupation, and education level) was collected.

3.3. Manipulation Check

The independent sample *t*-test showed that participants in the "AI overview present" group perceived significantly greater AI involvement compared to the absent group ($M_{present}$ = 5.67, SD = 0.99 vs. M_{absent} = 4.57, SD = 1.66; t = 4.41, $p < 0.001$), confirming successful manipulation.

3.4. Main Effect Test

An independent samples *t*-test was conducted to examine the effect of AI review overview (present vs. absent) on the perceived usefulness of customer reviews section. Results showed that participants in the AI overview present group reported significantly

higher perceived usefulness ($M_{present}$ = 5.89, SD = 0.65 vs. M_{absent} = 5.41, SD = 1.15; t = 2.83, p = 0.005), which supported H1.

4. Study 2: The Mediating Role of Perceived Diagnosticity

This study aims to re-examine the main effect of AI overview on perceived usefulness of the customer reviews section in a different context and further explore the mediating role of perceived diagnosticity. We predict that the main effect would persist in the new scenario and this effect would be mediated by perceived diagnosticity.

4.1. Data Sources and Stimuli

A total of 206 Chinese participants were recruited through Credamo (M_{age} = 31.52, SD = 8.93; 70.9% female). Participants were compensated with a monetary reward upon completing the experiment. After consenting to begin the experiment, participants were asked to imagine themselves planning a weekend getaway. While browsing an online travel agency platform "SmartTrip", they came cross a city nature park named "COLORFUL" and were attracted by its promotional content. To obtain more information, participants proceeded to examine the customer reviews section. Participants were then provided with images of the customer reviews section from the fictional platform SmartTrip to serve as stimulus materials (see Appendix A). The experiment also employed a single-factor between-subjects design (AI overview: present vs. absent), with participants randomly assigned to one of the two groups. A power analysis conducted using G*Power indicated that a minimum of 118 participants was required to detect a large effect (f = 0.4) with 99% power at α = 0.05; the obtained sample size satisfied the power requirement. Similarly to Study 1, in the present group, AI overview was displayed at the top of the customer reviews section, and the stimulus materials emphasized that the overview content was AI-generated from customer reviews and adopted the same objective and concise expression style. Meanwhile, the absent group was shown only individual customer reviews.

4.2. Procedure and Measures

Similarly to Study 1, after reading the reviews section, participants were asked whether they perceived the introduction of the platform technology to manage reviews as a manipulation check. Next, similar to Study 1, participants rated the perceived usefulness (Cronbach's α = 0.86). The perceived diagnosticity measured by a 3-items scale which was adapted to capture participants' experiential perceptions within the simulated e-commerce platform context (e.g., "How helpful are the reviews' contents provided by the platform in helping you understand the destination? 1 = unhelpful, 7 = strongly helpful [12,52]"; Cronbach's α = 0.73). Finally, demographic data (gender, age, occupation, and education) was collected.

4.3. Manipulation Check

The independent samples *t*-test showed that participants in the AI overview presence group perceived significantly greater AI involvement compared to the absence group ($M_{present}$ = 5.80, SD = 0.96 vs. M_{absent} = 4.48, SD = 1.18; t = 8.80, $p < 0.001$), indicating successful manipulation.

4.4. Main Effect Test

An independent sample *t*-test was conducted to re-examine the effect of AI overview (present vs. absent) on the perceived usefulness of customer reviews section in an online travel agency platform context. Results showed that participants in the AI overview present group reported significantly higher perceived usefulness ($M_{present}$ = 5.58, SD = 0.63 vs. M_{absent} = 5.12, SD = 0.99; t = 4.56, $p < 0.001$). Thus, H1 was again supported.

4.5. Mediation Effect Analysis

To test the mediating role of perceived diagnosticity, a mediation analysis was conducted using the bootstrap method (PROCESS Model 4), with AI overview as the independent variable, perceived diagnosticity as the mediator, and perceived usefulness as the dependent variable, controlling for gender, age, occupation and education. The 95% confidence interval was set with 5000 bootstrap samples. Results showed AI overview had a significant effect on perceived diagnosticity (β = 0.20, SE = 0.09, p = 0.037, 95% CI [0.013, 0.382]; Figure 2). Perceived diagnosticity, in turn, significantly influenced perceived usefulness (b = 0.80, SE = 0.66, p < 0.001, 95% CI [0.669, 0.929]). The indirect effect of AI overview on perceived usefulness through perceived diagnosticity was significant (β = 0.16, SE = 0.08, 95% CI [0.013, 0.322]); the direct effect remained significant (β = 0.37, SE = 0.09, p < 0.001, 95% CI [0.193, 0.545]; Table 1), indicating partial mediation. Thus, H2 was confirmed.

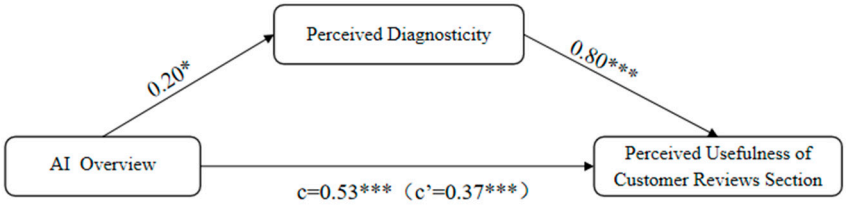

Figure 2. The mediation effect of perceived diagnosticity. Note: * indicates p < 0.05, *** indicates p < 0.001.

Table 1. Mediation result of Study 2.

	β	SE	LLCI	ULCI	Effect Size
Total effects	0.527	0.116	0.299	0.755	
Direct effects (AIO→PUCRS)	0.369	0.089	0.193	0.545	69.81%
Indirect effects (AIO→PD→PUCRS)	0.158	0.079	0.013	0.322	30.19%

Note: AIO = AI overview, PD = perceived diagnosticity, PUCRS = perceived usefulness of customer reviews section.

5. Study 3: The Moderating Role of the Need for Cognition

This study further explores potential moderating variables while replicating the main effect in a different online consumption context. We predict that the need for cognition (NFC) will moderate the effect of AI overview on users' perceived usefulness of the customer reviews section on the e-commerce platform.

5.1. Data Sources and Stimuli

A total of 242 Chinese participants were recruited through Credamo (M_{age} = 31.26, SD = 7.88; 62.00% female), with each participant receiving a monetary reward upon completing the experiment. Participants were instructed to imagine ordering food on a fictional food delivery online platform called "MT" and showed interest in a beef pho from a restaurant. Given that they had no previous experience with the restaurant, participants initially examined the customer reviews section on MT to gain a better understanding of the restaurant's food quality. Participants were then provided with images of the customer reviews section from the fictional platform MT to serve as stimulus materials (see Appendix A). This experiment employed a 2 (AI overview: present vs. absent) × 2 (Need for cognition: HNFC vs. LNFC) between-subjects design. A power analysis conducted using G*Power indicated that a minimum of 128 participants were required to detect a large effect

(f = 0.4) with 80% power at $\alpha = 0.05$; the obtained sample size satisfied the power requirement. Similarly to previous experiments, the present group was exposed to the AI overview at the top of the customer reviews section, and the stimulus material indicated that the overview content was AI-summarized from customer reviews and adopted the same objective and concise language style, while the absence group viewed only individual customer reviews. Need for cognition grouping was determined based on participants' measurement scores.

5.2. Procedure and Measures

Following the same procedure as previous experiments, after browsing the reviews section, participants were asked to evaluate whether they perceived the introduction of the online platform to manage their platforms' reviews as a manipulation check. Subsequently, similar to previous studies, perceived usefulness (Cronbach's $\alpha = 0.83$) and perceived diagnosticity (Cronbach's $\alpha = 0.72$) were measured, the relevant scales were adapted to suit the needs of the simulated experimental context. Participants' need for cognition was assessed using a simplified 6-item scale (e.g., "I would prefer complex to simple problems", "I would rather do something that requires little thought than something that is sure to challenge my thinking abilities (r) [53]"; Cronbach's $\alpha = 0.96$). Finally, participants provided demographic data including gender, age, occupation and education level.

5.3. Manipulation Check

This experiment first examined the effectiveness of the AI overview manipulation in the online food delivery context. The analysis showed that the AI overview present group perceived significantly higher levels of technology incorporation compared to the absent group ($M_{present} = 5.88$, SD = 0.98 vs. $M_{absent} = 4.37$, SD = 1.51; t = 9.24, $p < 0.001$), confirming successful manipulation. For NFC grouping, a median-split method was employed [54]. First, the average score of NFC items (after reverse-coding where necessary) was calculated. Participants scoring above the median were classified as the HNFC group, while those scoring below were assigned to the LNFC group. A one-way ANOVA confirmed that the HNFC group scored significantly higher than the LNFC group ($M_{HNFC} = 5.46$, SD = 0.47 vs. $M_{LNFC} = 2.97$, SD = 0.97; F (1, 240) = 365.72, $p < 0.001$), indicating successful manipulation of NFC.

5.4. Main Effect and Interaction Analysis

A 2 × 2 ANOVA revealed a significant main effect of AI overview on the perceived usefulness of the customer reviews section ($M_{present} = 5.77$ vs. $M_{absent} = 5.37$; F (1, 238) = 16.00, $p < 0.001$), as well as a significant interaction effect (F (1, 238) = 5.73, $p = 0.017$). Specifically, for the HNFC group, there was no significant difference in perceived usefulness between the present and absent conditions ($M_{present} = 5.89$ vs. $M_{absent} = 5.73$; F (1, 119) = 1.51, $p = 0.222$). In contrast, for the LNFC group, perceived usefulness was significantly higher in the AI overview present condition compared to the absent condition ($M_{present} = 5.65$ vs. $M_{absent} = 5.01$; F (1, 119) = 17.79, $p < 0.001$; Figure 3). These results support H3a.

5.5. Moderated Mediation

Regarding the moderating role of NFC, the analysis first examined the HNFC group. Results showed that AI overview had no significant effect on perceived diagnosticity ($\beta = 0.11$, SE = 0.11, $p = 0.332$, 95% CI [−0.110, 0.323]); the direct effect ($\beta = 0.07$, SE = 0.10, 95% CI [−0.118, 0.266]) and the indirect effect were also non-significant ($\beta = 0.09$, SE = 0.09, 95% CI [−0.074, 0.296]). Thus, perceived diagnosticity did not mediate the effect of the HNFC group. For the LNFC group, AI overview significantly influenced perceived diagnosticity ($\beta = 0.36$, SE = 0.13, $p = 0.009$, 95% CI [0.092, 0.618]). The direct effect was also

significant (β = 0.34, SE = 0.11, p = 0.002, 95% CI [0.133, 0.553]), as was the indirect effect (β = 0.30, SE = 0.11, 95% CI [0.078, 0.526]; Table 2). These findings indicate that for the LNFC group, perceived diagnosticity mediated the effect of AI overview on perceived usefulness of customer reviews section, supporting H3b.

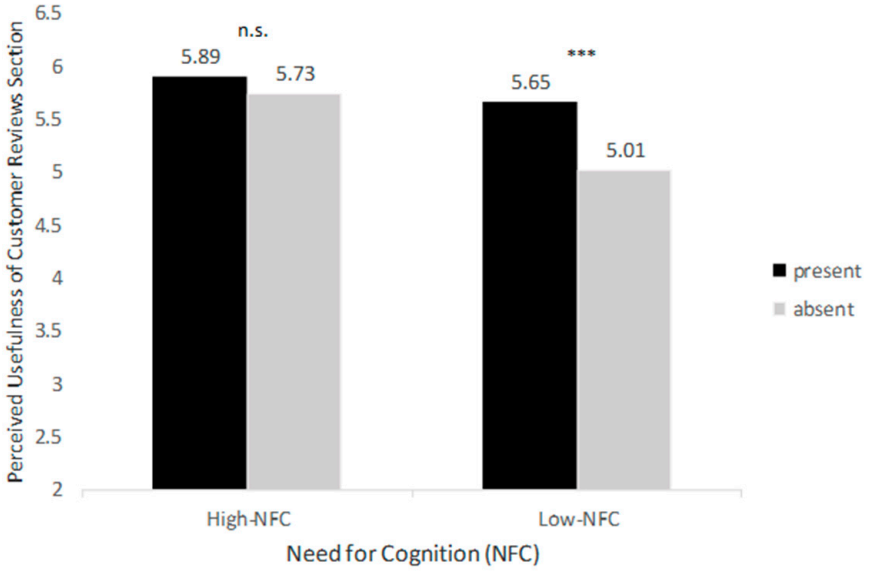

Figure 3. Effect of AI overview and need for cognition on perceived usefulness. Note: n.s. indicates not significant, *** indicates $p < 0.001$.

Table 2. Results of the moderate mediation effect of Study 3.

NFC	Effect Type	β	SE	LLCI	ULCI
High-NFC	Total effects	0.160	0.131	−0.098	0.419
	Direct effects (AIO→PUCRS)	0.074	0.097	−0.118	0.266
	Indirect effects (AIO→PD→PUCRS)	0.086	0.092	−0.074	0.296
Low-NFC	Total effects	0.638	0.151	0.339	0.936
	Direct effects (AIO→PUCRS)	0.343	0.106	0.133	0.553
	Indirect effects (AIO→PD→PUCRS)	0.295	0.114	0.078	0.526

Note: AIO = AI overview, PD = perceived diagnosticity, PUCRS = perceived usefulness of customer reviews section, NFC = need for cognition.

6. Conclusions

This research investigates the influence of the AI overview on consumers' perceived usefulness of the customer reviews section on e-commerce platforms across different online contexts (online shopping, online travel agency and online food delivery), the results show that the presence of AI overview, compared to its absence, positively influences consumers' perceived usefulness of the customer reviews section (H1). Furthermore, perceived diagnosticity mediates the effect of AI overview on perceived usefulness of the customer reviews section (H2). The presence of AI overview increases perceived diagnosticity, which in turn enhances consumers' perceived usefulness of the customer reviews section. Moreover, for the main effect, no significant difference in perceived usefulness was observed between the presence and absence of AI overview among HNFC participants. Meanwhile, for LNFC participants, AI overview significantly improved the perceived usefulness of the customer reviews section (H3a). Drawing on CLT, further

analysis showed that NFC moderated the mediation process. Specifically, the mediating effect of perceived diagnosticity was insignificant for HNFC participants, as the AI overview falls to meet their need for comprehensive and detailed information, thereby limiting their product or service evaluations. Consequently, the impact of the AI overview on perceived diagnosticity remained limited for this group. In contrast, for LNFC participants, the presence of AI overview effectively supports their need for efficient evaluation, thereby resulting in a significant mediating effect of perceived diagnosticity (H3b).

6.1. Theoretical Contributions

First, this research addresses a gap in the current literature on consumer perceptions of AI overview by investigating the relationship between AI overview and consumers' perceived usefulness of the customer reviews section on e-commerce platforms, focusing on the application of AI technology in e-commerce contexts and proposing ways to enhance consumer experiences. Previous research on AI applications has primarily centered on recommendations and human–machine interactions [2,55–57], with limited studies examining AI-assisted review management on online platforms [58,59]. Through multi-context experiments, this study confirmed the positive impact of AI overview on consumers' perceived usefulness of the customer reviews section. This finding not only supplements research on the effect of AI integration in online platforms but also contributes to the further exploration of mechanisms that enhance consumers' purchase and sharing intentions.

Second, this research contributes to understanding perceived diagnosticity in review management by validating its mediating role in the relationship between AI overview and the perceived usefulness of the customer reviews section. Prior studies have established that perceived diagnosticity fosters consumer attitudes and decision confidence, and that comprehensive, efficient access to product or service information enhances perceived diagnosticity [40]. This study constructs a theoretical framework from the perspective of CLT, demonstrating that perceived diagnosticity effectively bridges AI overview and consumers' perceived usefulness of the customer reviews section on e-commerce platforms, thereby uncovering the psychological mechanism behind the effectiveness of AI overview.

Finally, a key contribution of this research lies in examining how NFC moderates the relationship between AI overview and the perceived usefulness of the customer reviews section in AI-mediated e-commerce environments. Prior studies have explored how consumers with different NFC levels prefer and process information differently [45,47,51]. This research highlights how AI overview uniquely interacts with consumers' cognitive tendencies. The findings reveal that the positive effect of AI overview on perceived usefulness is significant for HNFC consumers but limited for LNFC consumers. Moreover, the mediating role of perceived diagnosticity operates only for HNFC consumers. These insights refine existing theoretical frameworks, such as TAM and CLT, by clarifying how individual cognitive traits shape responses to the AI-mediated customer reviews environment, paving the way for more differentiated AI service strategy studies on e-commerce platforms.

6.2. Management Implications

This research offers practical recommendations for online platforms to enhance consumer experience.

First, for e-commerce platforms validated in experimental contexts (online shopping, online travel services, and online food ordering), these platforms should prominently provide AI overview in the customer reviews section, as the empirical evidence confirms that this feature significantly enhances consumers' perceived usefulness of the customer reviews section, not only contributing to optimizing the overall customer experience on e-commerce platforms but also fostering the development of positive consumer attitudes,

thereby effectively driving behavioral conversion in purchase decision-making and increasing willingness to engage in eWOM recommendations.

Second, AI overview should be clear, readable, and focused on key attributes. Platforms should present core product or service features, such as experience, quality and performance in a structured manner, categorizing information for better readability. Additionally, providing two-sided messages can enhance credibility, thereby boosting perceived diagnosticity, improving user experience, and increasing satisfaction with e-commerce platforms. It is recommended that e-commerce platforms incorporate traceable source references with AI overview. For instance, when presenting qualitative assertion such as "excellent product quality", platforms should provide hyperlinks to specific customer reviews that substantiate these claims. This approach effectively addresses consumers' cognitive needs for extended information search, thereby enhancing consumers' perception on information credibility and diagnostic value of overview content.

Finally, e-commerce platforms should identify consumers' NFC levels, as the influence of AI overview on perceived usefulness varies by NFC. NFC as a stable personality trait is not easily altered [60]. For LNFC consumers, AI overview significantly enhanced the perceived usefulness of the customer reviews section, whereas this effect is negligible for HNFC consumers. Thus, the presence of AI overview should be tailored. Specifically, platforms can segment users based on their browsing and purchase history to infer NFC tendencies. For LNFC consumers, AI overview should be prominently displayed or pinned to the top of the review to maximize perceived usefulness. For HNFC consumers, platforms can offer customizable overview options, allow consumers to choose the level of detail in the overview (e.g., "Brief,"" Detailed," or "Key Excerpts" mode) to cater to their preference for complexity and control.

6.3. Limitations and Future Directions

This study has several limitations, which suggest directions for future research. First, although our study employed online experiments with simulated decision-making, the reliance on imagined scenarios may limit the applicability of findings to real-world practices: participants' decisions in imagined scenarios may differ from actual behavior in the e-commerce context, where additional factors such as time constraints, and social influence play a role. Additionally, due to limitations in the experimental design, the participant sample for this study was drawn from a single country, and the similar cultural background may have led to convergent perceptions, which may restrict the external validity of the findings. Future research could conduct field experiments in more interactive and realistic e-commerce settings to obtain more genuine feedback from consumers, and recruit participants from diverse geographical regions to strengthen the reliability of the results. Second, the experimental contexts were limited to e-shop, travel services, and food delivery, excluding other e-commerce platform types. To better understand consumer decision-making mechanism, future studies could extend these findings to contexts such as hotel bookings and restaurant ratings. Third, it remains to be explored whether alternative explanations exist, such as whether the presence of AI overview can enhance consumers' decision confidence, which in turn affects their purchase intentions. Such explanations should be further investigated in future research. Third, additional boundary conditions, beyond NFC, should be further explored. For instance, whether anthropomorphic cues (e.g., human-like phrasing or emojis) in AI overview influence perceived usefulness or other information could further clarify the impact of AI application on consumer perceptions. Finally, the generation of customer review overviews is accompanied by the platform's collection and reuse of consumer information, which may pose potential threats to consumers' right to be informed. Moreover, how platforms balance the weight of positive

and negative information in AI overviews remains an important question. If positive content is overrepresented for promotional purposes, consumers may feel misled, thereby undermining the positive effect of AI overview on perceived usefulness. These issues warrant further examination in future research.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

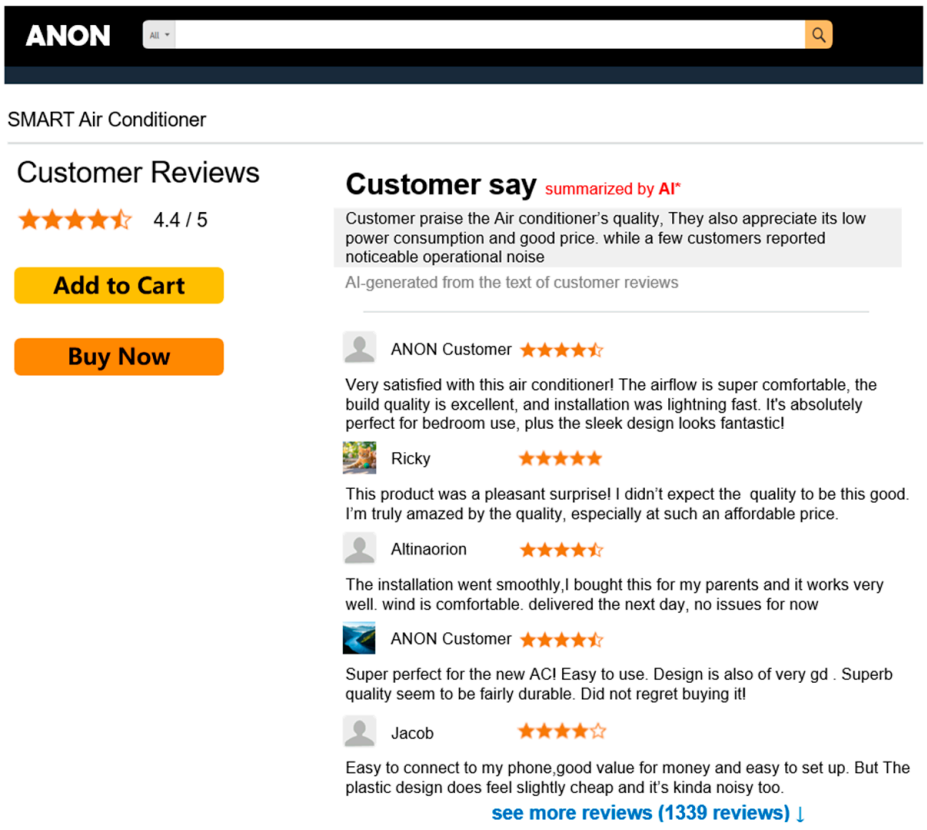

Figure A1. Study 1: present group stimuli. Note: The original stimuli materials were presented in Mandarin, and the above stimuli materials are the translated versions.

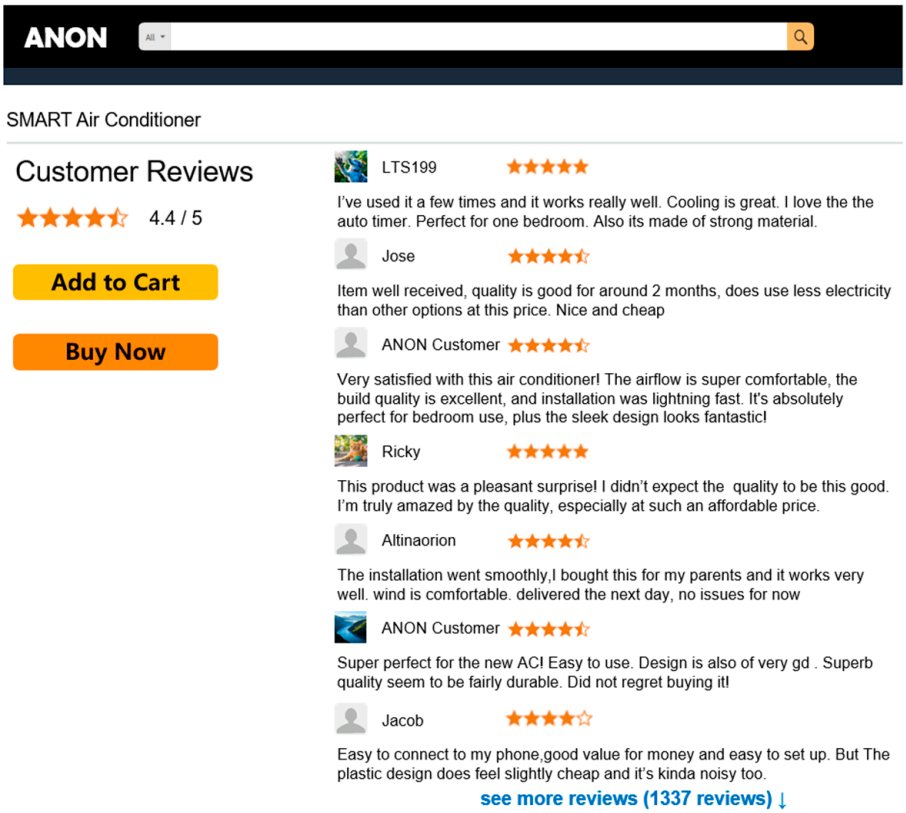

Figure A2. Study 1: absent group stimuli. Note: the original stimuli materials were presented in Mandarin, and the above stimuli materials are the translated version.

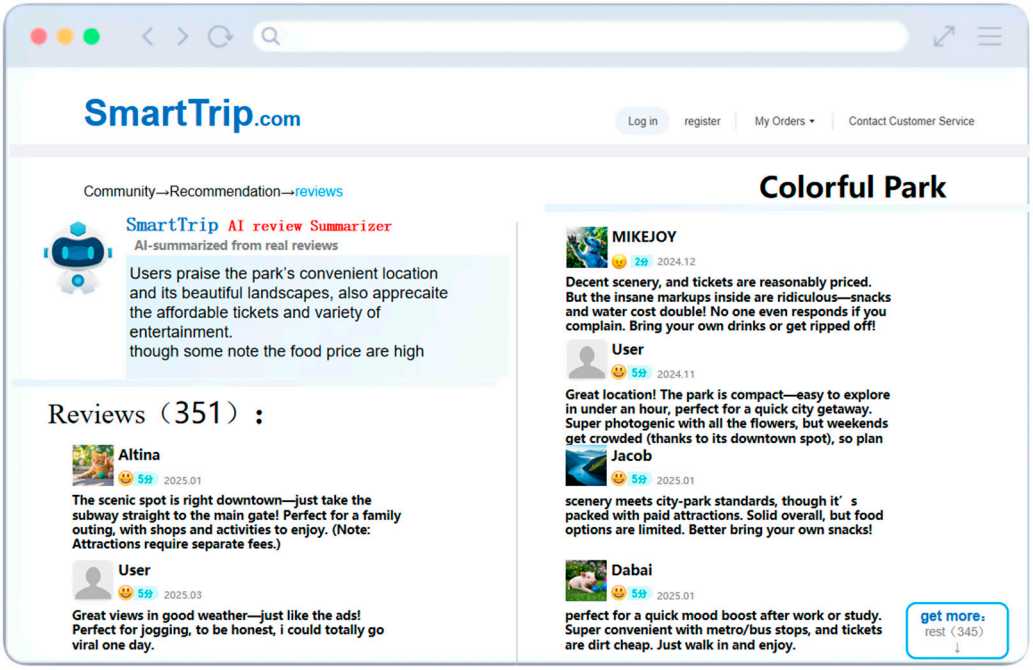

Figure A3. Study 2: Present group stimuli. Note: The original stimuli materials were presented in Mandarin, and the above stimuli materials are the translated versions.

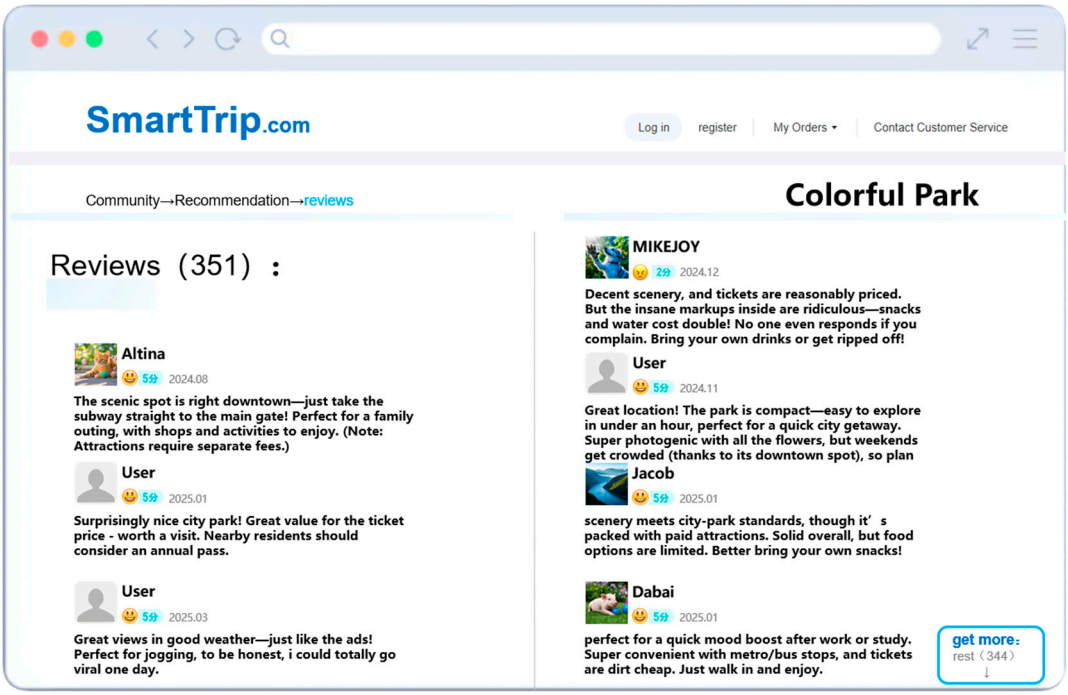

Figure A4. Study 2: absent group stimuli. Note: The original stimuli materials were presented in Mandarin, and the above stimuli materials are the translated versions.

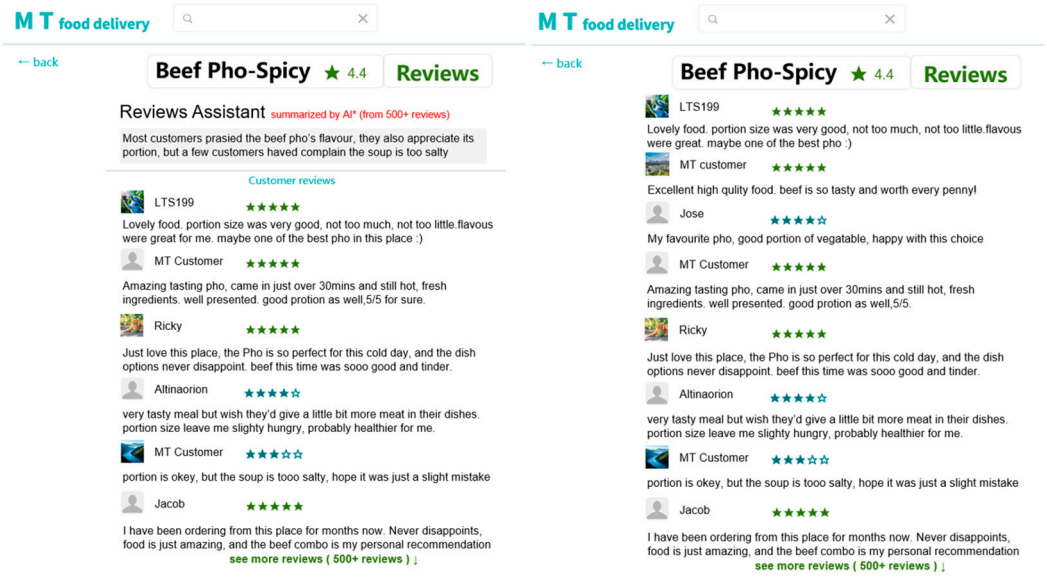

Figure A5. Study 3: present (L) and absent (R) group stimuli. Note: The original stimuli materials were presented in Mandarin, and the above stimuli materials are the translated versions.

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